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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,353	10/10/2002	Guenther Eberz	Mo6996/LeA	8113

7590 10/19/2005

Bayer Corporation
Patent Department
100 Bayer Road
Pittsburgh, PA 15205-9741

EXAMINER

KAM, CHIH MIN

ART UNIT	PAPER NUMBER
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1656

DATE MAILED: 10/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/069,353

Applicant(s)

EBERZ ET AL.

Examiner

Chih-Min Kam

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7-67 and 70-87 is/are pending in the application.
- 4a) Of the above claim(s) 8-10, 12, 13, 31-64, 66, 67, 70-72 and 87 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7, 11, 14-30, 65 and 73-86 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/22/02 & 10/10/02 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/10/03; 3/31/03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Election/Restrictions***

1. Applicant's election with traverse of Group 1, claims 1-12, 14-30 and 65 (directed to SEQ ID NO:7 and 8, ORF1) in the response and amendment filed July 28, 2005 is acknowledged. In the amendment, new claims 73-87, directed to a vector for heterologous expression of a gene cluster for spinosyn biosynthesis, comprising nucleic acids that code for enzymes involved in the biosynthesis of spinosyn, are added. The traversal is on the ground(s) that the Examiner states that the genus of Group 1 lacks a special technical feature because the claim, as a whole, does not contribute over the prior art. In particular, the Examiner states that spinosyn biosynthesis genes are taught by the prior art reference of Baltz *et al.* (USPN 6,143,526), and thus the genus of any nucleic acid encoding a region coding for an enzyme activity involved in spinosyn biosynthesis does not contribute over the prior art as a whole. While the Baltz *et al.* reference teach only homologous transformation of *S. spinosa* strains with the biosynthetic genes of spinosn, new claims 73-87 are drawn to the heterologous expression of the gene cluster for spinosyn biosynthesis in transformed organisms other than *S. spinosa*, in which the vectors containing the whole gene cluster, the transfer of those vectors into heterologous host cells and the production of spinosyns in those cells are claimed. The heterologous expression of a whole gene cluster comprised of nucleic acids responsible for coding all of the enzymes involved in the biosynthesis of spinosn in organisms other than *S. spinosa* is neither taught nor suggested by Baltz *et al.*, and the recitations of claims 73-87 provide a special technical feature which can be shared with all of the other groups listed above and, thus, all of the claims recite a single general inventive concept.

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Applicant's response has been considered, however, the argument is not found persuasive because Group 1 claims are directed to a nucleic acid comprising at least one region coding for an enzyme activity involved in biosynthesis of spinosyn, which was shown in the prior art reference of Baltz *et al.* (USPN 6,143,526), thus the special technical feature of Group 1 is known, which does not contribute over the prior art as a whole. Regarding the newly added independent claim 73, where the claimed vector, which comprises nucleic acids that code for enzymes involved in the biosynthesis of spinosyn, is also disclosed in Baltz *et al.* Regarding claim 87, which is directed to a method of preparing spinosyn using the nucleic acids that code for the enzymes involved in the biosynthesis of spinosyn, belongs to SuperGroup E.

Claims 13, 31-64, 66, 67, 70-72 and 87, which are non-elected inventions, and claims 8-10 and 12, which are directed to non-elected sequences, are withdrawn from consideration. Therefore, claims 1-5, 7, 11, 14-30, 65 and 73-86 are examined. The requirement is still deemed proper and is therefore made FINAL.

Claim Objections

2. Claims 7 and 11 are objected to because the claim contains recitation of non-elected sequences.
3. Claim 65 is objected to because of the use of the term "Method". The use of "A method" is suggested.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

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4. Claims 1-5, 7 and 11 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claim is drawn to a nucleic acid without recitation of "isolated" or "purified". As written, the claim does not explicitly indicate the hand of man. Insertion of "isolated" or "purified" in connection with a nucleic acid is suggested. See MPEP § 2105.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-5, 14-30, 65 and 73-86 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1-5, 14-30, 65 and 73-86 are directed to a nucleic acid comprises at least one region which codes for an enzyme activity involved in the biosynthesis of spinosyn; a DNA construct, a vector or a host cell comprising the nucleic acid; a vector for heterologous expression of a gene cluster for spinosyn biosynthesis comprising nucleic acids that code for enzymes involved in the biosynthesis of spinosyn; or a method for preparing a polypeptide encoded by a nucleic acid comprises of at least one region which codes for an enzyme activity involved in the biosynthesis of spinosyn. The specification discloses the specific nucleic acid sequence (e.g., SEQ ID NO:7, ORF1) which encodes a specific enzyme (e.g., SEQ ID NO:8, methyltransferase) involved in the biosynthesis of spinosyn (pages 12-18), and specific BAC

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clone (e.g., DSM 13010, DSM 13011, DSM 13012, P11/G6, P11/B10, P8/G11) comprising specific gene clusters having defined nucleic acid sequences (Fig. 7). However, the specification has not shown various nucleic acids comprising an undefined region or segment which encodes an enzyme activity (not specified) involved in the spinosyn biosynthesis. Furthermore, there is no description of any particular structure to activity relationship in the disclosed species.

Without guidance on the correlation of structure to activity for the nucleotide region coding for an enzyme, one skilled in the art would not know how to identify a nucleotide segment which encodes an enzyme involved in the spinosyn biosynthesis. The lack of description of the correlation of structure to activity of nucleotide segments and the lack of representative species for the nucleotide variants as encompassed by the claims, applicants have failed to sufficiently describe the claimed invention, in such full, clear, concise terms that a skilled artisan would not recognize applicants were in possession of the claimed invention.

6. Claims 7 and 11 rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 7 and 11 are directed to a nucleic acid comprises at least one region which codes for an enzyme activity involved in the biosynthesis of spinosyn, comprising at least one sequence selected from (a) SEQ ID NO:7 (the elected sequence), (b) a part sequence which is at least 14 base pairs of the sequence defined in (a), (c) a sequence which hybridizes to the sequence defined in (a), (d) a sequence which is at least 70% identical to sequence defined in (a), (e) a sequence which is complementary to sequence defined in (a), and (g) a sequence which, due to

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the degeneracy of the genetic code, codes for the same amino acid sequence as the sequence defined in (a)-(d). The specification discloses, for example, the nucleotide sequence of SEQ ID NO: 7 which encodes the amino acid sequence of SEQ ID NO:8, a methyltransferase (page 12, lines 10-13); and a preferred hybridization condition (page 5). However, there is no disclosure of any particular structure to function/activity relationship in the disclosed nucleotide and amino acid sequences. Furthermore, the specification does not demonstrate a nucleotide sequence which comprises, hybridizes to, is complementary to the specific sequence, or is a fragment (at least 14 base pairs) or variant (at least 70% identity) of the specific sequence can encode an enzyme involved in the biosynthesis of spinosyn. Without guidance for structure to function/activity for the enzyme sequence and its coding nucleotide sequence, one skilled in the art would not know which portions or fragments of the sequence are essential for the activity of the enzyme, and how to identify a nucleotide sequence encoding a functional enzyme. The lack of a structure to function/activity relationship in the nucleotide and peptide sequences, and the lack of representative species as encompassed by the claims, applicants have failed to sufficiently describe the claimed invention, in such full, clear, concise terms that a skilled artisan would not recognize applicants were in possession of the claimed invention.

7. Claim 18 is rejected under 35 U.S.C. § 112, first paragraph, enabling deposit, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. To produce the claimed vector, one of skill in the art is required to have DSM13010, DSM13011 and DSM13012. While the instant specification contains deposit information, the requirements to enable such a deposit have not been fully met by the instant

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application because the record must also contain a deposit receipt and a statement certifying that all restrictions on accessibility to said deposit be irrevocably removed by Applicant upon the granting of the patent (see M.P.E.P. § 2404.01); this statement may be certified by Applicants or Applicants' representative.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-5, 7, 14-30, 65 and 73-86 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
9. Claim 7 is indefinite because the claim recites "hybridizes" without indicating the hybridization condition, it is not clear under what condition a sequence is hybridized to the sequence defined in (a). It is also clear that if the sequence defined in (a), e.g., SEQ ID NO:7 encodes an enzyme involved in biosynthesis of spinosyn, how a sequence which hybridizes or is complementary to the sequence of (a) can also encode the enzyme.
10. Claims 1-5, 14-30 and 65 are indefinite because of the use of the term "at least one region coding for an enzyme activity involved in biosynthesis of spinosyn". The term cited renders the claim indefinite, it is not clear what are the metes and bounds for the region encoding an enzyme involved in biosynthesis of spinosyn while the nucleotide sequence of the region is not indicated. Claims 2-5, 16-26, 28-30 and 65 are included in the rejection because they are dependent on rejected claims and do not correct the deficiency of the claim from which they depend.

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11. Claims 73-86 are indefinite because of the use of the term "nucleic acids that code for enzymes involved in biosynthesis of spinosyn". The term cited renders the claim indefinite, it is not clear what are these nucleic acids while their nucleotide sequences are not indicated. Claims 74-86 are included in the rejection because they are dependent on rejected claims and do not correct the deficiency of the claim from which they depend.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

12. Claims 1-5, 7, 11, 73 and 83 are rejected under 35 U.S.C. 102(e) as being anticipated by Baltz *et al.* (U. S. Patent 6,143,526, filed March 9, 1998).

Baltz *et al.* teach an isolated DNA molecule comprising a DNA sequence (spinosyn biosynthetic gene) that encodes a spinosyn biosynthetic enzyme, where the cloned genes are designated as spnA, spnB,.....spnS, and the proposed functions of these genes (e.g., polyketide synthase, methyl transferase, and others) in spinosyn biosynthesis are shown in Fig. 1, one of the

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gene indicated as bases 20168-20995 of SEQ ID NO:1 has 100% sequence identity to SEQ ID NO:7 (see attached sequence alignment; column 8, lines 24-56; claims 1-5, 7 and 11). The reference also discloses a recombinant DNA vector which comprises the DNA sequence that encodes a spinosyn biosynthetic enzyme, and a host cell transformed with a recombinant vector (column 9, line 65-column 10, line 3; claims 73 and 83). The term "for heterologous expression of a gene cluster for spinosyn biosynthesis" is an intended use, which does not have weight in a product claim, claim 73. thus, claim 73 is directed to a vector comprising nucleic acids that code enzymes involved in spinosyn biosynthesis, which is anticipated by the reference.

Conclusion

13. No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Min Kam whose telephone number is (571) 272-0948. The examiner can normally be reached on 8.00-4:30, Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathleen Kerr can be reached at 571-272-0931. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Chih-Min Kam, Ph. D.

Patent Examiner

A handwritten signature in black ink, appearing to read 'Chih-Min', followed by a long horizontal stroke.

**CHIH-MIN KAM
PATENT EXAMINER**

CMK

October 14, 2005

Matches 828; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY	1	GTGTTGCCAGGTGGCGCACCAACATCGCAGCAGGTGGCGCAGATGTATGACTCTGCTCAGC	60
Db	20168	GTGTTGCCAGGTGGCGCACCAACATCGCAGCAGGTGGCGCAGATGTATGACTCTGCTCAGC	20227
QY	61	CCGTGCTGAACTCGGTGGCGGGGGCCCTGCGCCATCCACACCGGTACTGGGGAAC	120
Db	20228	CCGTGCTGAACTCGGTGGCGGGGGCCCTGCGCCATCCACACCGGTACTGGGGAAC	20287
QY	121	GACGGCGGGCTTCCTGGCAGCAGCGCGCGACCGGCTCACCGACCTTGTGCGCGACGG	180
Db	20288	GACGGCGGGCTTCCTGGCAGCAGCGCGCGACCGGCTCACCGACCTTGTGCGCGACGG	20347
QY	181	ACCGTCTCGATGGCGCGCTTTCGACTGCTCGATGTTGGGTGCGGTACCGACACACGCG	240
Db	20348	ACCGTCTCGATGGCGCGCTTTCGACTGCTCGATGTTGGGTGCGGTACCGACACACGCG	20407
QY	241	CTGGCGGTGGCGCGCACACCGCATCAGATCACCGGCATCACCGTCAGCCAGGTGCAA	300
Db	20408	CTGGCGGTGGCGCGCACACCGCATCAGATCACCGGCATCACCGTCAGCCAGGTGCAA	20467
QY	301	GTGGCCATCGCGCTGATTTGCGCACCGGACCGGACTAAGCCACCGGGTGGACTTCTCG	360
Db	20468	GTGGCCATCGCGCTGATTTGCGCACCGGACCGGACTAAGCCACCGGGTGGACTTCTCG	20527
QY	361	TGCGTCTGATGCCATGTCCTGCGGTACCGGACCAATGCTTTTCGACCGCGCTCGGCCATG	420
Db	20528	TGCGTCTGATGCCATGTCCTGCGGTACCGGACCAATGCTTTTCGACCGCGCTCGGCCATG	20587
QY	421	CAGTCTGCTTTGGAGATGTCGGAACCGGACCGGTGCCATCGGGAATTCCTTCGAGTACTC	480
Db	20588	CAGTCTGCTTTGGAGATGTCGGAACCGGACCGGTGCCATCGGGAATTCCTTCGAGTACTC	20647
QY	481	AAACCCGCTGGCATCTCGCGCTCACCGAGTCTCACAACGAGCGGGCGCGCGGATG	540
Db	20648	AAACCCGCTGGCATCTCGCGCTCACCGAGTCTCACAACGAGCGGGCGCGCGGATG	20707
QY	541	CCGGTGTCCGGGACAGGTGGCGCGACCGGCTTCGGATCTGCTGCTGAGCAACTTCTG	600
Db	20708	CCGGTGTCCGGGACAGGTGGCGCGACCGGCTTCGGATCTGCTGCTGAGCAACTTCTG	20767
QY	601	GAATCGCTGCTGGCAGCGGGTTCGAGATCTCGATTTGGAGAGACGTTGTCGAGGACC	660
Db	20768	GAATCGCTGCTGGCAGCGGGTTCGAGATCTCGATTTGGAGAGACGTTGTCGAGGACC	20827
QY	661	CGGTACTTCATGCCCGAGTTTCGCCAAGAGCTCGCTGGCACCGACACCGGATCGCGAC	720
Db	20828	CGGTACTTCATGCCCGAGTTTCGCCAAGAGCTCGCTGGCACCGACACCGGATCGCGAC	20887
QY	721	AGGTACGGCGCGCTGTCGCGGCTGGCGCGGCTGCGGCTGCGGATTTATGAGAAATATGCC	780
Db	20888	AGGTACGGCGCGCTGTCGCGGCTGGCGCGGCTGCGGCTGCGGATTTATGAGAAATATGCC	20947
QY	781	CACGACATGGGCTATGCGATTTCTGACGGCGCGGAGCGGCTCGGCTGA	828
Db	20948	CACGACATGGGCTATGCGATTTCTGACGGCGCGGAGCGGCTCGGCTGA	20995

ALIGNMENTS

RESULT 1
 US-09-036-987A-1
 ; Sequence 1, Application US/09036987A
 ; Patent No. 6143526
 ; GENERAL INFORMATION:
 ; APPLICANT: Baltz, Richard H.
 ; APPLICANT: Broughton, Mary C.
 ; APPLICANT: Crawford, Kathryn P.
 ; APPLICANT: Madduri, Krishnamurthy
 ; APPLICANT: Merlo, Donald J.
 ; APPLICANT: Treutway, Patti J.
 ; APPLICANT: Turner, Jan R.
 ; APPLICANT: Waldron, Clive
 ; TITLE OF INVENTION: Biosynthetic Genes For Spinosyn Insecticide
 ; TITLE OF INVENTION: Production
 ; NUMBER OF SEQUENCES: 39
 ; CORRESPONDENCE ADDRESS:
 ; ADDRESSEE: Dow AgroSciences LLC Patent Department
 ; STREET: 9330 Zionsville Road
 ; CITY: Indianapolis
 ; STATE: Indiana
 ; COUNTRY: USA
 ; ZIP: 46268
 ; COMPUTER READABLE FORM:
 ; MEDIUM TYPE: Floppy disk
 ; COMPUTER: IBM PC compatible
 ; OPERATING SYSTEM: PC-DOS/MS-DOS
 ; SOFTWARE: Patent In Release #1.0, Version #1.30
 ; CURRENT APPLICATION DATA:
 ; APPLICATION NUMBER: US/09/036,987A
 ; FILING DATE: 09-MAR-1998
 ; CLASSIFICATION: 435
 ; ATTORNEY/AGENT INFORMATION:
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 ; REFERENCE/DOCKET NUMBER: 50,608
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 ; INFORMATION FOR SEQ ID NO: 1:
 ; SEQUENCE CHARACTERISTICS:
 ; LENGTH: 80161 base pairs
 ; TYPE: nucleic acid
 ; STRANDEDNESS: double
 ; TOPOLOGY: linear
 ; MOLECULE TYPE: DNA (genomic)
 ; US-09-036-987A-1

Query Match 100.0%; Score 828; DB 3; Length 80161;
 Best Local Similarity 100.0%; Pred. No. 1.7e-179;